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10/811,131	03/26/2004	William J. LaBarge	DP-309936	2800

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EXAMINER

YOUNG, NATASHA E

ART UNIT	PAPER NUMBER
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1743

MAIL DATE	DELIVERY MODE
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10/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/811,131

Applicant(s)

LABARGE ET AL.

Examiner

Natasha Young

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/26/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 19-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 8 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 03/26/2004, 06/23/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Claims 19-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on September 4, 2007.

Applicant's election of claims 1-18 in the reply filed on September 4, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Specification

The disclosure is objected to because of the following informalities: The words "endcone" and "end cone" are used throughout the disclosure. Examiner suggests the use of "end cone".

Appropriate correction is required.

Claim Objections

Claims 8 and 15 are objected to because of the following informalities: The words "endplate", in line 3 of claim 8, and "endcone", in line 2 of claim 15, are used. Examiner suggests the use of "end plate" and "end cone". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 recites the limitation "the under floor converter" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 5-7, 10-12, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mogi (JP 10-244167) in view of Maus et al (5,173,267).

Regarding claim 1, Mogi teaches a catalyst structural body for purifying exhaust gas with the number of cells of the layer increases from the outer peripheral towards the center (see Abstract), the area ratio of the layer of the core to the total cross-section is 5% to 50% (see paragraph 0007), and the cross-section of an inner layer may be 20% or less of the whole (see paragraph 0011) such that 70 wt%, or greater, of the catalyst

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would be disposed on the center, or core, of a substrate whether upstream or downstream.

Mogi does not teach a catalytic converter, but Mogi does teach the use of a substrate in an internal combustion engine (see paragraph 0001), which contains a catalytic converter.

Maus et al teaches a catalytic converter with two honeycomb bodies, which may have different axial lengths and may have a different number of channels per unit of cross-sectional area (see Abstract and column 5, lines 13-16).

Maus et al does not teach an upstream substrate having an upstream catalyst disposed thereon, wherein greater than or equal to 70 wt % of the upstream catalyst is disposed at a core of the upstream substrate, wherein the weight percent is based on a total weight of the upstream catalyst disposed on the upstream substrate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that a catalytic converter comprises an upstream substrate having an upstream catalyst disposed thereon, wherein greater than or equal to 70 wt % of the upstream catalyst is disposed at a core of the upstream substrate, wherein the weight percent is based on a total weight of the upstream catalyst disposed on the upstream substrate for more uniform flow (see Mogi paragraph 0008) and is provided with a double casing system which withstands alternating thermal strains (see Maus et al column 1, lines 36-44).

Claim 2 depends on claim 1 such that the reasoning used to reject claim 1 will be used to reject the dependent portions of the claim.

Regarding claim 2, Mogi teaches a catalyst structural body for purifying exhaust gas with the number of cells of the layer increases from the outer peripheral towards the center (see Abstract), the area ratio of the layer of the core to the total cross-section is 5% to 50% (see paragraph 0007), and the cross-section of an inner layer may be 20% or less of the whole (see paragraph 0011).

Mogi also teaches that the diffusion along the peripheral is low and that the main flow of exhaust gas is through the core of the catalyst structure (see paragraph 0008).

Mogi does not teach the upstream substrate is configured to receive greater than or equal to 60% of an exhaust volume through the core.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the upstream substrate such that greater or equal to 60% of the exhaust volume flows through the core of the substrate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Claim 3 depends on claim 2 such that the reasoning used to reject claim 2 will be used to reject the dependent portions of the claim.

Regarding claim 3, Mogi teaches a catalyst structural body for purifying exhaust gas with the number of cells of the layer increases from the outer peripheral towards the center (see Abstract), the area ratio of the layer of the core to the total cross-section is

5% to 50% (see paragraph 0007), and the cross-section of an inner layer may be 20% or less of the whole (see paragraph 0011).

Mogi also teaches that the diffusion along the peripheral is low and that the main flow of exhaust gas is through the core of the catalyst structure (see paragraph 0008).

Mogi does not teach the upstream substrate is configured to receive greater than or equal to 60% of an exhaust volume through the core.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the upstream substrate such that greater or equal to 60% of the exhaust volume flows through the core of the substrate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Claims 5-6 depend on claim 1 such that the reasoning used to reject claim 1 will be used to reject the dependent portions of the claims.

Regarding claim 5, Mogi teaches a substrate is a rounded substrate (see drawing 1), which may be used as an upstream catalyst.

Regarding claim 6, Mogi teaches greater than or equal to 50 wt % of the catalyst is disposed at a reduced core having a diameter less than or equal to 44% of an overall diameter of the substrate (see paragraph 0007).

Claim 7 depends on claim 6 such that the reasoning used to reject claim 6 will be used to reject the dependent portions of the claim.

Regarding claim 7, Mogi teaches greater than or equal to 30 wt % of the catalyst is disposed at a second reduced core having a diameter less than or equal to 30% of the overall diameter of the substrate (see paragraph 0007).

Regarding claim 10, Mogi et al teaches that with the quality of material the catalyst activation time is short and the temperature rises quickly (see paragraph 0015).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to achieve a light-off in less than or equal to 25 seconds with quality catalyst material, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Claim 11 depends on claim 1 such that the reasoning used to reject claim 1 will be used to reject the dependent portions of the claim.

Regarding claim 11, Mogi teaches a catalyst structural body for purifying exhaust gas with the number of cells of the layer increases from the outer peripheral towards the center (see Abstract), the area ratio of the layer of the core to the total cross-section is 5% to 50% (see paragraph 0007), and the cross-section of an inner layer may be 20% or less of the whole (see paragraph 0011) such that 60 wt%, or greater, of the catalyst would be disposed on the center, or core, of the substrate whether upstream or downstream.

Maus et al teaches a catalytic converter with two honeycomb bodies, which may have different axial lengths and may have a different number of channels per unit of cross-sectional area (see Abstract and column 5, lines 13-16).

Maus et al does not teach an upstream substrate having an upstream catalyst disposed thereon, wherein greater than or equal to 60 wt % of the downstream catalyst is disposed at a core of the downstream substrate, wherein greater than or equal to 60 wt % downstream catalyst is distributed at a bulk of the downstream substrate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that a catalytic converter of claim 1 further comprises a downstream substrate in fluid communication with an upstream substrate downstream substrate comprises a downstream catalyst disposed thereon, wherein greater than or equal to 60 wt % downstream catalyst is distributed at a bulk of the downstream substrate for more uniform flow (see Mogi paragraph 0008) and is provided with a double casing system which withstands alternating thermal strains (see Maus et al column 1, lines 36-44).

Claim 12 depends on claim 11 such that the reasoning used to reject claim 11 will be used to reject the dependent portions of the claim.

Regarding claim 12, Mogi teaches a catalyst structural body for purifying exhaust gas with the number of cells of the layer increases from the outer peripheral towards the center (see Abstract), the area ratio of the layer of the core to the total cross-section is 5% to 50% (see paragraph 0007), and the cross-section of an inner layer may be 20% or less of the whole (see paragraph 0011) such that greater than or equal to 80 wt % of the downstream catalyst is distributed at the bulk of the downstream substrate.

Claim 16 depends on claim 11 such that the reasoning used to reject claim 11 will be used to reject the dependent portions of the claim.

Regarding claim 16, Mogi does not teach the upstream substrate and the downstream substrate are disposed in a housing, wherein a gap is disposed between the upstream substrate and the downstream substrate sufficient to create turbulent flow in the exhaust fluid prior to entering the downstream substrate.

Maus et al teaches the upstream substrate and the downstream substrate are disposed in a housing, wherein a gap is disposed between the upstream substrate and the downstream substrate sufficient to create turbulent flow in the exhaust fluid prior to entering the downstream substrate (see figure 1 and column 3, lines 43-48).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that catalyst substrate may be provided with a double casing system which withstands alternating thermal strains and to compensate for longitudinal expansions (see Maus et al column 1, lines 36-44 and column 3, lines 43-48).

Claim 17 depends on claim 16 such that the reasoning used to reject claim 16 will be used to reject the dependent portions of the claim.

Regarding claim 17, Mogi does not teach the gap is up to about 20 mm in length.

Maus et al teaches the gap is up to about 20 mm in length (see column 3, lines 43-48).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that catalyst substrate may be provide with a double casing system which

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withstands alternating thermal strains and to compensate for longitudinal expansions (see Maus et al column 1, lines 36-44 and column 3, lines 43-48).

Claim 18 depends on claim 17 such that the reasoning used to reject claim 17 will be used to reject the dependent portions of the claim.

Regarding claim 17, Mogi does not teach the gap is about 10 mm to about 20 mm in length.

Maus et al teaches the gap is about 10 mm to about 20 mm in length (see column 3, lines 43-48).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that catalyst substrate may be provide with a double casing system which withstands alternating thermal strains and to compensate for longitudinal expansions (see Maus et al column 1, lines 36-44 and column 3, lines 43-48).

Claims 4 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mogi (JP 10-244167) and Maus et al (US 5,173,267) as applied to claims 1 and 11 above, and further in view of Heck et al (Automobile Exhaust Catalysts).

Claim 4 depends on claim 1 such that the reasoning used to reject claim 1 will be used to reject the dependent portions of the claim.

Regarding claim 4, Mogi does not teach a closed-couple converter comprising the upstream substrate.

Mogi teaches the substrate (see Abstract).

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Maus et al teaches the catalytic converter (see Abstract) but not the placement of the converter such that it is closed-coupled.

Heck et al teaches that it is well known to use closed-couple catalyst (see page 447, 2nd paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modified the combined teachings of Mogi and Maus et al with the teachings of Heck et al for achieving low emission (see Heck et al page 447, 2nd paragraph).

Claims 13-14 depend on claim 11 such that the reasoning used to reject claim 11 will be used to reject the dependent portions of the claims.

Regarding claim 13, Mogi does not teach an under-floor converter comprises the downstream substrate.

Mogi teaches a catalyst substrate (see Abstract).

Maus et al teaches a catalytic converter with two similar honeycomb bodies (see figures 2 and 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that catalyst substrate may be provide with a double casing system which withstands alternating thermal strains (see Maus et al column 1, lines 36-44).

Heck et al teaches the combination of a closed-couple catalyst upstream from an under-floor catalyst (see page 447, 2nd paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the invention of the combined teachings of Mogi and Maus et al, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was to modify the combined teachings of Mogi and Maus et al with the teachings of Heck et al for HC, CO, and NO_x removal, thus, eliminating severe overtemperatures where high CO concentrations occur in the rich transient driving cycle (see Heck et al page 447, 2nd paragraph).

Regarding claim 14, Mogi does not teach the under-floor converter comprises an inlet portion configured to cause turbulent flow in the downstream substrate.

Mogi teaches a catalyst substrate (see Abstract).

Maus et al teaches a catalytic converter with two similar honeycomb bodies (see figures 2 and 3) and turbulent flow in the catalytic converter (see column 3, lines 43-48) such that there is turbulent flow in the downstream substrate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that catalyst substrate may be provided with a double casing system which withstands alternating thermal strains and to compensate for longitudinal expansions (see Maus et al column 1, lines 36-44 and column 3, lines 43-48).

Heck et al teaches the combination of a closed-couple catalyst upstream from an under-floor catalyst (see page 447, 2nd paragraph).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the invention of the combined teachings of Mogi and Maus et al, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was to modify the combined teachings of Mogi and Maus et al with the teachings of heck et al for HC, CO, and NO_x removal, thus, eliminating severe overtemperatures where high CO concentrations occur in the rich transient driving cycle (see Heck et al page 447, 2nd paragraph).

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mogi (JP 10-244167) and Maus et al (US 5,173,267) as applied to claim 1 above, and further in view of LaBarge et al (US 2002/0081252 A1).

Claim 8 depends on claim 1 such that the reasoning used to reject claim 1 will be used to reject the dependent portions of the claim.

Regarding claim 8, Mogi teaches a substrate (see Abstract).

Mogi does not teach an upstream converter comprises the upstream substrate, an inlet end, and an outlet end, wherein inlet end comprises an endplate.

Maus et al teaches a catalytic converter with figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that catalyst substrate may be provide with a double casing system which withstands alternating thermal strains (see Maus et al column 1, lines 36-44).

Maus et al does not teach an inlet end with an end plate.

LaBarge et al teaches an endplate (see paragraph 0022).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined teachings of Mogi and Maus et al with the teachings of LaBarge et al for added support of the catalytic converter.

Claim 9 depends on claim 8 such that the reasoning used to reject claim 8 will be used to reject the dependent portions of the claim.

Regarding claim 9, Mogi does not teach an exhaust conduit is coupled to the end plate at an angle θ of about 90 degrees to a face of the end plate.

Maus et al teaches a catalytic converter with figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of Maus et al such that catalyst substrate may be provide with a double casing system which withstands alternating thermal strains (see Maus et al column 1, lines 36-44).

Maus et al does not teach an inlet end with an end plate.

LaBarge et al teaches an endplate to the shell, or conduit, of the catalytic converter (see paragraph 0022).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined teachings of Mogi and Maus et al with the teachings of LaBarge et al for added support of the catalytic converter.

LaBarge et al does not teach the conduit coupled to the end plate at an angle θ of about 90 degrees to a face of the end plate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made couple the conduit to the end plate at an angle θ of about 90 degrees to a face of the end plate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mogi (JP 10-244167), Maus et al (US 5,173,267), and Heck et al (Automobile Exhaust Catalysts) as applied to claim 14 above, and further in view of LaBarge et al (US 2002/0081252 A1).

Claim 15 depends on claim 14 such that the reasoning used to reject claim 14 will be used to reject the dependent portions of the claim.

Regarding claim 15, Mogi does not teach the inlet portion comprises an end cone.

LaBarge et al teaches teach the inlet portion comprises an end cone (see paragraph 0022).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Mogi with the teachings of LaBarge et al for added support of the catalytic converter.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natasha Young whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30am-6:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NY


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SUPERVISORY PATENT EXAMINER